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Working Paper Series

CCD Adjustment to the 1990-91 SASS: A Comparison of Estimates

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February 1995

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CCD Adjustment To The 1990-91 SASS:

A Comparison of Estimates

Prepared for

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Submitted to

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November 1994

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Table of Contents

List of Tables

List of Figures

Appendices

Preface

This report evaluated several technical issues related to the 1990-91 Schools and Staffing Survey (SASS) estimates and survey operations. It was prepared by Synectics for Management Decision Inc., a contractor to the National Center for Education Statistics, as Task 20B.2 under Contract No. RN-91-0600.01.

This report was prepared by Fan Zhang and Mehrdad Saba, research analysts for Synectics. Additional assistance from the Synectics staff was provided by Sameena Salvucci, Al Holt, Michael Chang, and Brian R. Scanlon, all working under the direction of Wray Smith, Research Director.

Several key people from National Center for Education Statistics are also worth mentioning. Daniel Kasprzyk, Kerry Gruber, and Steve Kaufman were instrumental in reviewing and providing helpful comments on all drafts. This report would not have been possible without their valuable support.

I. Background and Purpose

This project, CCD Adjustments to the 1990-91 Schools and Staffing Survey (SASS), called for an evaluation of several technical issues related to SASS estimates and survey operations. The purpose of the evaluation was to help in the interpretation of SASS data and the improvement of SASS survey operations.

Preliminary analysis of the 1990-91 SASS showed estimates of the total number of public school teachers in 10 specific states were at least 15 percent higher than Common Core of Data (CCD) estimates for each state. One cause for these overestimates was that school administrators, responding to SASS, did not report school information in the same way in the 1990-91 SASS as was reported in the 1990-91 CCD. For example, a school with grades K-8 at one address might be two CCD schools - an elementary school with grades K-6 and a middle school with grades 7 and 8. The elementary school may have been sampled for SASS, but the principal reported for both elementary and middle school, etc.

The Special Surveys and Analysis Branch of the National Center for Education Statistics (NCES) established a post processing edit to bring SASS estimates of teacher counts for ten individual states in line with CCD estimates. The following ten states were selected as initial "problem" states. The number in parenthesis indicates the Federal Information Processing Standard (FIPS) code for each state: Arizona (04), Arkansas (05), Iowa (19), Missouri (29), Montana (30), Nebraska (31), North Dakota (38), Oklahoma (40), South Dakota (46), and Wisconsin (55). The post processing edit developed a set of guidelines which: (1) established situations in which the 1990-91 SASS data should be edited to conformance with CCD; (2) indicated how the individual data should be adjusted; and (3) detailed the computer changes for all specific cases in which data needed to be adjusted.

The purpose of this project was to conduct a comparable adjustment for the remaining 40 states and the District of Columbia, to evaluate the prevalence and seriousness of the over-reporting, and to evaluate the impact of making the adjustment in the remaining states on state and national SASS estimates, and as directed by NCES, to contact problem schools to determine the reasons for the discrepancy between SASS and CCD.

The post processing edit, as implemented on the initial ten states, was modified and applied to the remaining 40 states and the District of Columbia. A detailed description of the original rules established by NCES and how they were modified is located in the Section IV of this report.

Estimates were generated for five characteristics of schools based upon application of the modified post processing edit: the number of full-time equivalent teachers, total student enrollment, the number of Hispanic students (grades K-12), the number of students participating in extended day or before- or after-school day care, and the number of students who receive free or reduced price lunches. These estimates were then compared to official estimates from the 1990-91 SASS.

This report compares estimates from the two databases, the Pre-post Adjusted 1990-91 SASS and the Post Processing Adjusted 1990-91 SASS. The 1990-91 SASS is a set of four interrelated national surveys of public and private elementary and secondary schools, districts, teachers, and administrators conducted by the National Center for Education Statistics (NCES). The CCD, NCES' primary dataset on elementary and secondary public schools in the United States, is a national statistical database from which information can be compared across all states. One of the purposes of the sample design for the 1990-91 SASS is to produce estimates for public schools at the national and state level. This report will examine those estimates and compare them to estimates from the CCD.

The 1990-91 SASS defines a public school as an institution which provides educational services and: (1) has at least one of grades 1-12 (or comparable ungraded), (2) has one or more teachers to give instruction, (3) is located in one or more buildings, (4) receives public funds as primary support, (5) has an assigned administrator, and (6) is operated by an education agency.[1]

The 1990-91 CCD defines a public school as an institution which provides educational services and: (1) has one or more grade groups (Prekindergarten - 12), (2) has one or more teachers to give instruction, (3) is located in one or more buildings (4) has an assigned administrator, (5) receives public funds as primary support, and (6) is operated by an education agency.[2]

A comparison at the individual record level between public school data from the 1990-91 SASS and the 1990-91 CCD is possible because each defines a public school in the same way with one exception. CCD includes prekindergarten through 12th grade. This exception does not effect our comparison because the SASS definition of a public school fits within the CCD definition. This comparison examines SASS data against CCD data.

This report: (1) describes the two data bases, SASS and CCD; (2) details the steps taken in applying the modified post-processing edit to the remaining 40 states and Washington D.C.; and (3) compares estimates from the 1990-91 SASS with newly generated estimates based upon adjustments to SASS for comformance to CCD.

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[1]The SASS definitions used in this report are from the 1990-91 "Schools and Staffing in The United States: A Statistical Profile, 1990-91" and the "1990-91 Schools and Staffing Survey: Data File User's Manual." NCES 93-144 - Volume I, January 1994.

[2]The CCD definitions used in this report are from the 1991-92 School Year "The Nonfiscal Surveys of the Common Core of Data." NCES, December 1991.

II. Description of the Two Databases

A. Schools and Staffing Survey (SASS)

The 1990-91 SASS is a set of four interrelated national surveys of public and private elementary/secondary schools, districts, teachers, and administrators conducted by the National Center for Education Statistics (NCES). The sample is designed to produce 1) national estimates for public and private schools, 2) state estimates for public schools, 3) state/elementary, state/secondary, and national combined public school estimates, and 4) detailed association estimates and grade-level estimates for private schools.

The components making up the SASS are:

1. The Teacher Demand and Shortage (TDS) survey targets public school district personnel who provide information about their district's student enrollment, number of teachers, position vacancies, new hires, teacher salaries and incentives, and hiring and retirement policies (sample sizes: 5,424 public and 3,270 private).

2. The School Administrator Survey focuses on teaching and administrative background information of school principals/headmasters (sample sizes: 9,687 public and 3,270 private).

3. The School Survey includes information on student characteristics, staffing patterns, student-teacher ratios, types of programs and services offered, length of school day and school year, graduation and college application rates, and teacher turnover rates. The 1990-91 private school questionnaire incorporates questions on aggregate demand for both new and continuing teachers (sample sizes: 9,687 public and 3,270 private).

4. The Teacher Survey focuses on teacher qualifications, including their training, experience, and certification. It also includes information on teacher workload, perceptions and attitudes about teaching, job mobility, and working conditions (sample sizes: 56,051 public and 9,166 private).

Sample Design for 1990-91 SASS

The school sample is a single-stage sample stratified by state/by school level in public schools, and by state/by affiliation/by school level in private schools. Schools are systematically selected using a probability proportionate to the number of teachers within the school. For the private sector, an area sample of approximately 600 schools is used to improve the coverage of the list frame.

The school districts to which the selected public schools belong comprised the district sample. The administrators of the selected schools comprised the administrator sample.

Within the first-stage school sample, a second-stage teacher sample is selected stratified by teacher experience level (teachers with three or fewer years of experience were classified as "new" and all other teachers were classified as "experienced"). Within a school, teachers are selected systematically with equal probability. The average number of teachers selected per school depend upon the school level and sector (four, eight, and six teachers were selected respectively within elementary, secondary and combined schools for the public sector; and four, five, and three teachers were selected respectively within elementary, secondary and combined schools for the private sector.) A supplemental sample of 2,121 bilingual/English as a Second Language (ESL) teachers was added to improve bilingual/ESL teacher estimates.

Significant changes in the sampling frames from which schools were selected occurred between the 1987-88 and 1990-91 SASS. In the 1987-88 SASS, the primary frame for both the public and private sectors was a list of schools provided by Quality Education Data, Inc. (QED). In the 1990-91 SASS, the public school frame was a list of schools developed from the 1988-89 CCD. For private schools, the 1988-89 QED list (supplemented by lists from private schools associations) had been used for a universe survey called the 1989-90 Private School Survey (PSS). The same frame, with information added from the PSS, was used to select the private school sample. The list frame was supplemented by an area sample, and the number of primary sampling units (PSUs) was increased from 75 to 123.

B. Common Core of Data (CCD)

The Common Core of Data (CCD) is a comprehensive national statistical database comparable across all states on all public elementary and secondary schools, education agencies and state education programs. The CCD contains three categories of information: general descriptive information, basic statistics, and fiscal data. The general descriptive information includes names, addresses, and administrative information; basic statistics include numbers of students and teachers, demographic information on each, and high school completion rates; and fiscal data are revenues and current expenditures. The CCD is maintained in three separate, but linked, data sets: (1) schools, (2) education agencies, and (3) states.

> The purpose of the CCD is to provide basic statistical information on all children in this country enrolled in public schools from prekindergarten through twelfth grade. In addition, it provides basic statistical information on the funds collected and expended for providing public elementary and secondary education.
>
> The objectives of the CCD are:
>
> (1) to provide an official listing of public elementary and secondary schools and school districts in the nation; and

(2) to provide basic information and descriptive statistics on public elementary and secondary schools and schooling.

III. Datasets and Variables

The SASS data file used for the adjustment is the 1990-91 SASS School data file cataloged under

ZEEWRM.SASS3A3B.YR9091.NCES.SCHOOL.SAS

on the Boeing mainframe.

The CCD data files used for comparison with the SASS data file are Public School data files from the 1988-89 and 1990-91 releases of Common Core of Data on CD-ROM provided by NCES.

The linkage between SASS and CCD datasets is through an identification variable called "CCDIDSCH" that enables the appropriate data files to be merged and then matched. A list of all variables used in the adjustment process is provided in Appendix A.

IV. Technical Approach

An adjustment of 1990-91 SASS data to appropriate CCD grade ranges was made for ten states based on a methodology developed by staff of the Special Surveys and Analysis Branch of NCES.

A Statistical Analysis System Software program was written to:

(1) compare CCD and Comparable Variables on the 1990-91 SASS datasets; and

(2) adjust and modify the 1990-91 SASS Public School Data so that SASS has comparable grade range to the 1990-91 CCD.

A copy of the computer program used in implementing the adjustment to the 1990-91 SASS is provided in Appendix B.

CCD has certain basic information including: grade-range, number of teachers, and number of students. Assuming that there is not a change in schools from the time of sampling (1988-89 CCD) to data collection (1990-91 SASS), CCD and SASS estimates for these variables should be the same or similar. Because this was not the case in ten states, SASS estimates for individual school records in these states were compared to CCD individual school records. CCD, for the most part was assumed to be accurate. Therefore, NCES established rules for making CCD adjustments to the 1990-91 SASS in these ten states in which certain characteristics of schools appeared to be overestimated. The ten states are [the number in parenthesis indicates the Federal Information Processing Standard (FIPS) code for

each state]: Arizona (04), Arkansas (05), Iowa (19), Missouri (29), Montana (30), Nebraska (31), North Dakota (38), Oklahoma (40), South Dakota (46), and Wisconsin (55). These rules (1) established situations in which data from the 1990-91 SASS should be changed; (2) indicated how the data should be adjusted; and (3) detailed the computer changes for all specific data adjustments.

The purpose of changing the data is to compare specific characteristics of schools from the 1990-91 SASS with characteristics of the same schools from the 1990-91 CCD in order to investigate the source of overestimation on the 1990-91 SASS. Data from the CCD are believed to be more accurate. Therefore, in certain situations in which individual school records from the 1990-91 SASS are different than the CCD, the SASS data were adjusted according to CCD standards.

The guidelines which establish when and if data should be adjusted (number 1 below) are based upon a comparison of individual school records from the 1990-91 SASS with individual records of the same school from the 1990-91 CCD. The specific rules on how to change the data from the 1990-91 SASS (number 2 below) are designed to adjust the records of specific school characteristics from the 1990-91 SASS to bring them in line with CCD records of the same school characteristics. Data from actual responses from the 1990-91 SASS questionnaire are the items which are adjusted in this process. In order to complete the adjustment, certain changes had to made on how the data on individual records of school characteristics are computed (number 3 on page 8).

(1) The guidelines established were: the data should be changed if the 1990-91 SASS reports one of grades K through 12 and CCD reports elementary, middle, or secondary only. The data should not be changed if the difference in grade range from the 1990-91 SASS and CCD was only one grade. The data were not altered if the only difference between estimates from the 1990-91 SASS and CCD appeared in prekindergarten and/or ungraded categories. In addition, the data were not changed if CCD enrollment is zero and the type of school was either special education or vocational/technical.

(2) The following list indicates how the data from the 1990-91 SASS were adjusted. The items in parenthesis are the column codes from the 1990-91 SASS questionnaire which corresponds to a specific characteristic.[3] For example, the school characteristic in a) is grade level and student enrollment and the corresponding column codes are SC069-SC100.

a) For grade level and student enrollment (SC069 - SC100): Set Yes/No and enrollment to missing for grades for which CCD reports 0 enrollment.

[3]The column codes referred to in this report are from the "1990-91 Schools and Staffing Survey: Data File User's Manual." NCES 93-144 - Volume I, January 1994.

b) For student enrollment, in head counts, grades K-12 or comparable ungraded levels (SC012): Sum total enrollment for October 1, 1990 [SC074 to SC098 (even numbers)] and put in SC012 and total student enrollment for October 1, 1990 (SC101). (Add prekindergarten and postsecondary for SC101.)

c) Divide the new SC012 by the original SC012 - this will establish a new ratio and will be referred to as RATIO.

d) Multiply student enrollment as of the first of October for current school year (SC013) by RATIO to establish new SC013. (Round it to a whole number.)

e) For school level (SC014): Set to elementary, if new grade range is K-6, K-8 *(=1)*.
Set to middle, if new grade range is 6-8, 6-8, 6-9, 7-8, 7-9 *(= 2)*.
Set to secondary, if new grade range is 7-12, 8-12, 9-12, 10-12 *(=3)*.
Set to combined for all other cases *(= 4)*.

f) For ethnic origin (SC022 - SC026): Use RATIO to adjust. (Round to whole numbers and verify that sum of SC022 to SC026 = SC012.)

g) For prekindergarten program (SC043): If the grade level prekindergarten (SC071) is "no" or "missing," then
set SC043 = *2* and
set SC044 = missing.

h) For kindergarten (SC046): If the grade level kindergarten (SC073) is "no" or "missing," then
set SC046 = *2* and
set SC047 = missing and
set SC048 = missing.

i) For Chapter 1 services (SC051): If SC051 = *2*, do not change SC051 - SC054.
If SC051 = *1*, set SC051 - SC054 to missing.

j) For eligibility for free or reduced price lunch (SC055): If SC055 = *2*, do not change SC055 - SC058.
If SC055 = *1*, set SC055 - SC058 to missing.

k) For grade 12 (SC104): If SC104 = *1* and grade level 12 (SC097) = *1*, do not change SC104 - SC113.
If SC104 = *2*, do not change SC104 - SC113.
If SC104 = *1* and SC097 = missing, then
set SC104 = *2* and
set SC105 - SC113 = missing.

l) For unpaid volunteers (SC172): If SC172 = *2*, do not change.
If SC172 = *1*, set SC172 and SC173 to missing.

m) Multiply CCD teacher/student ratio by new SC012 - Put result in new total number of teachers for grades K-12 (SC116) (rounded). If CCD number of teachers = 0 (missing), use RATIO from step c to adjust.

n) Set number of full-time teachers for grades K-12 (SC114) and number of part-time teachers for grades K-12 (SC115) to missing.

o) For teacher ethnic origin (SC117 - SC121): If any are 0, do not change.
If SC117 - SC120 are 0, put SC116 into SC121.
Otherwise, set nonzero SC117 - SC121 to missing.

(3) The following list expresses all the computer changes for data adjustments. The items in parenthesis are the column codes (see footnote number 3 on page 6) from the 1990-91 SASS questionnaire which corresponds to a specific characteristic. For example, the school characteristic in a) is student absentee rating and the corresponding column code is SC021.

a) For student absentee rating (SC021): Set to missing unless *0* (keep all 0's).

b) For availability of specific curriculum (SC027 - SC042): Keep "NO's". Set "YES's" and number of students to missing.

c) For library/media center (SC049 - SC050): Set to missing.

d) For new teachers for grades K-12 (SC128 - SC153): Set to missing even if it's 0.

e) For full- or part-time positions (SC154 - SC171): Set to missing unless 0. (keep 0's.)

f) For teacher vacancies (SC174 - SC191): Set to missing.

g) For teacher absentee rating (SC122 - SC127): Set to missing unless 0. (keep 0's.)

These rules were modified when applied to the remaining 40 states and the District of Columbia. Attempts to apply the original rules for adjusting data from the 1990-91 SASS to the remaining 40 states and the District of Columbia uncovered certain flaws. There were certain situations that the original rules did not address.

In order to make CCD adjustments to SASS data from all 50 states and the District of Columbia the following modifications were established:

> In indicating how the data should be adjusted (2), two additions were made: For teacher ethnic origin (SC117-SC121), add the statement "do not change the 0's." For prekindergarten program (SC043), set 045 = missing.

The criteria used for adjusting the data, required modifying the data for 300 schools in 40 states and the District of Columbia. Table 1a (below) shows the weighted full-time equivalent teacher counts for the 10 primary "problem" states initially adjusted by NCES. Weighted full-time equivalent teacher counts for these 10 states, using the same process provided for the 40 additional states and the District of Columbia are also shown in Table 1b on page 10. The weighted teacher counts in table 1b are referred to as "post adjusted."

Table 1A.--SASS - 3A Weighted teacher counts for the ten "problem" states 1990-91 full-time equivalent teachers

FIPS CODE	STATE	CCD DATA	1990-91 SASS DATA*	AFTER ORIGINAL NCES ADJUSTMENT SASS/CCD (IN PERCENT)
04	Arizona	32,987	30,746	93.21
05	Arkansas	25,984	27,091	104.26
19	Iowa	31,045	33,850	109.04
29	Missouri	52,304	53,916	103.08
30	Montana	9,613	10,479	109.01
31	Nebraska	18,764	18,732	99.83
38	North Dakota	7,591	8,175	107.69
40	Oklahoma	37,221	38,307	102.92
46	South Dakota	8,511	10,072	118.34
55	Wisconsin	49,302	56,214	114.02

Source: U.S. Department of Education, NCES 1990-91 SASS: Data File User's Manual, Volumes I-II (Teachers Questionnaire)

* The SASS numbers contained in this table are after the original NCES adjustment.

Table 1B.--SASS - 3A Weighted teacher counts for the ten problem states 1990-91 full-time equivalent teachers (post adjusted)

FIPS CODE	STATE	CCD DATA	1990-91 SASS DATA*	AFTER MODIFICATION ADJUSTMENT SASS/CCD (IN PERCENT)
04	Arizona	32,987	30,159	91.43
05	Arkansas	25,984	27,091	104.26
19	Iowa	31,045	33,402	107.59
29	Missouri	52,304	52,632	100.63
30	Montana	9,613	10,363	107.80
31	Nebraska	18,764	18,107	96.50
38	North Dakota	7,591	7,953	104.77
40	Oklahoma	37,221	37,337	100.31
46	South Dakota	8,511	9,863	115.89
55	Wisconsin	49,302	55,207	111.98

Source: U.S. Department of Education, NCES, 1990-91 CCD (State Aggregate - Public School File), 1990-91 SASS (Public School File)

* The SASS numbers contained in this table are after the original NCES adjustment.

Problems in Matching Schools from the 1990-91 SASS to the 1990-91 CCD

One hundred and fifty-five schools in the 1990-91 SASS public school dataset are not available in the 1990-91 CCD dataset. Either the NCES agency identification number or the School identification number changed. Data from 29 out of the 155 schools in the 1990-91 SASS dataset which are not included in the 1990-91 CCD dataset, required adjustment. Information from the 1988-89 CCD file was used in adjusting the data for these 29 schools. Table 2 on page 11 shows the list of 29 schools with their corresponding CCD identification numbers (ACCDID) and SASS control numbers (CNTLNUM).

Attempts to match certain public schools from the 1990-91 SASS to the 1990-91 CCD failed because the NCES school identification number and/or the agency identification number changed from the time of the 1988-89 CCD ***(the sample frame for the 1990-91 SASS)*** to the 1990-91 CCD. Administrators at these schools received and filled-out a 1990-91 SASS questionnaire because the school address did not change or the questionnaire was forwarded to the appropriate new address. A possible explanation for the change in NCES school identification number and/or agency identification number is an organizational adjustment at the school district level. For example, a school may have changed from an elementary school in 1988 to a special education school in 1991. The NCES agency and/or school identification number may have been changed on the 1991 CCD because of the change in type of school. On the 1990-91 SASS, however, the change in school type and identification number may not have been indciated by the administrator who completed the questionnaire. Therefore, the school would have been recorded on the 1990-91 SASS according to its 1988 identification number.

Table 2.--1990-91 SASS schools adjusted To 1988-89 CCD data

Observation	ACCDID	CNTLNUM
1	020000500607	002100550137
2	020048000614	002102050330
3	020067000605	002103050139
4	040187000124	004102350138
5	060813007675	006103250132
6	061392008839	006105700137
7	120018002045	012100500736
8	120018002489	012100551237
9	130000101704	013100150131
10	130465001636	013108150139
11	170993000913	017105451432
12	180291000379	018103250137
13	220018001867	022101450339
14	220066001875	022102950230
15	220138001890	022105150236
16	z220177001845	022106400235
17	220189001848	022106850232
18	220195001852	022107050236
19	231071000345	023105050135
20	231436000703	023108950137
21	268024007500	026116650235
22	279018002063	027113200136
23	280216000365	028104400135
24	290000002342	029100150539
25	291229000854	029104550138
26	390437500315	039101150238
27	390437800506	039101250533
28	403222001941	040118250136
29	483912004463	048122100338

Source: U.S. Department of Education, NCES, 1990-91 CCD and 1990-91 SASS

Tables for Specific School Characteristics

The original rules (for the initial 10 "problem" states) with the modifications described on page 8 were applied to the remaining 40 states and the District of Columbia. Tables 3 and 4 on pages 12 and 13 demonstrate the number of FTEs and total student enrollment for the 1990-91 SASS and the 1990-91 CCD. Estimates are presented before and after CCD adjustment and in terms of SASS as percentage of CCD (SASS/CCD). The original ten problem states are shaded. These states do not report values for SASS/CCD which are greater than 115 percent (before adjustment) for FTEs because the 1990-91 SASS values in these tables were previously adjusted according to the original NCES post processing edit.

Tables 5, 6, and 7 on pages 14 through 16 express the original 1990-91 SASS data, the data after the CCD adjustment, and the percentage of the change for three characteristics of schools: number of Hispanic students (grades K-12), number of students participating in extended day or before- or after-school day care, and the number of students who receive free or reduced price lunches.

Table 3.--FTE Teachers for 1990-91 CCD, 1990-91 SASS Before and After CCD Adjustment

STATE	Before Adjustment			After Adjustment		
	CCD	SASS	SASS/CCD	CCD	SASS	SASS/CCD
U.S Total	**2,397,351**	**2,438,592**	**101.72%**	**2,397,351**	**2,381,943**	**99.36%**
Alabama	36,266	40,769	112.42%	36,266	40,112	110.60%
Alaska	6,710	6,610	98.51%	6,710	5,850	87.18%
Arizona	32,987	30,746	93.21%	32,987	30,159	91.43%
Arkansas	25,984	27,091	104.26%	25,984	27,091	104.26%
California	217,228	206,996	95.29%	217,228	204,148	93.98%
Colorado	32,342	34,462	106.55%	32,342	33,179	102.59%
Connecticut	34,549	34,300	99.28%	34,549	33,994	98.39%
Delaware	5,961	5,900	98.98%	5,961	5,858	98.27%
District of Columbia	5,950	5,543	93.16%	5,950	5,956	100.10%
Florida	108,088	105,167	97.30%	108,088	99,479	92.04%
Georgia	63,058	66,703	105.78%	63,058	65,414	103.74%
Hawaii	9,083	10,198	112.28%	9,083	10,198	112.28%
Idaho	11,254	11,500	102.19%	11,254	11,119	98.80%
Illinois	108,775	116,754	107.34%	108,775	115,385	106.08%
Indiana	54,509	55,528	101.87%	54,509	55,021	100.94%
Iowa	31,045	33,850	109.04%	31,045	33,402	107.59%
Kansas	29,140	31,646	108.60%	29,140	30,795	105.68%
Kentucky	36,777	37,673	102.44%	36,777	36,873	100.26%
Louisiana	45,377	45,271	99.77%	45,377	42,841	94.41%
Maine	15,513	16,069	103.58%	15,513	15,289	98.56%
Maryland	42,562	39,201	92.10%	42,562	39,201	92.10%
Massachusetts	54,003	59,667	110.49%	54,003	57,348	106.19%
Michigan	80,008	78,497	98.11%	80,008	76,285	95.35%
Minnesota	43,753	44,329	101.32%	43,753	39,933	91.27%
Mississippi	28,062	28,661	102.13%	28,062	28,446	101.37%
Missouri	52,304	53,916	103.08%	52,304	52,632	100.63%
Montana	9,613	10,479	109.01%	9,613	10,363	107.80%
Nebraska	18,764	18,732	99.83%	18,764	18,107	96.50%
Nevada	10,373	10,391	100.17%	10,373	9,960	96.02%
New Hampshire	10,637	10,852	102.02%	10,637	9,924	93.30%
New Jersey	79,886	89,630	112.20%	79,886	89,289	111.77%
New Mexico	16,703	17,491	104.72%	16,703	17,421	104.30%
New York	176,390	168,796	95.69%	176,390	161,839	91.75%
North Carolina	64,283	67,226	104.58%	64,283	66,961	104.17%
North Dakota	7,591	8,175	107.69%	7,591	7,953	104.77%
Ohio	102,714	103,214	100.49%	102,714	102,657	99.94%
Oklahoma	37,221	38,307	102.92%	37,221	37,337	100.31%
Oregon	26,163	25,905	99.01%	26,163	25,522	97.55%
Pennsylvania	100,275	109,205	108.91%	100,275	107,545	107.25%
Rhode Island	9,522	10,640	111.74%	9,522	10,508	110.35%
South Carolina	36,963	38,989	105.48%	36,963	38,945	105.36%
South Dakota	8,511	10,072	118.34%	8,511	9,863	115.89%
Tennessee	43,051	44,017	102.24%	43,051	43,964	102.12%
Texas	219,298	211,873	96.61%	219,298	203,900	92.98%
Utah	17,884	18,337	102.53%	17,884	18,216	101.86%
Vermont	7,257	6,911	95.23%	7,257	6,911	95.23%
Virginia	63,638	61,686	96.93%	63,638	61,686	96.93%
Washington	41,764	44,768	107.19%	41,764	44,002	105.36%
West Virginia	21,476	22,286	103.77%	21,476	21,704	101.06%
Wisconsin	49,302	56,214	114.02%	49,302	55,207	111.98%
Wyoming	6,784	7,349	108.33%	6,784	6,151	90.67%

Source: U.S. Department of Education, NCES, 1990-91 CCD and 1990-91 SASS (Public School)

Table 4.--Total Student Enrollment for 1990-91 CCD, 1990-91 SASS Before and After CCD Adjustment

	Before Adjustment			After Adjustment		
STATE	CCD	SASS	SASS/CCD	CCD	SASS	SASS/CCD
U.S Total	**41,223,804**	**40,103,702**	**97.28%**	**41,223,804**	**39,938,208**	**96.88%**
Alabama	721,806	688,980	95.45%	721,806	688,940	95.45%
Alaska	113,874	109,112	95.82%	113,874	107,270	94.20%
Arizona	639,853	590,529	92.29%	639,853	578,368	90.39%
Arkansas	436,286	415,981	95.35%	436,286	415,936	95.34%
California	4,950,474	4,798,136	96.92%	4,950,474	4,794,623	96.85%
Colorado	574,213	575,845	100.28%	574,213	575,790	100.27%
Connecticut	469,123	453,813	96.74%	469,123	453,349	96.64%
Delaware	99,658	96,375	96.71%	99,658	96,375	96.71%
District of Columbi	80,694	78,415	97.18%	80,694	77,974	96.63%
Florida	1,861,592	1,766,890	94.91%	1,861,592	1,683,290	90.42%
Georgia	1,151,687	1,102,779	95.75%	1,151,687	1,097,248	95.27%
Hawaii	171,708	176,149	102.59%	171,708	176,123	102.57%
Idaho	220,840	215,692	97.67%	220,840	215,650	97.65%
Illinois	1,821,407	1,804,706	99.08%	1,821,407	1,803,863	99.04%
Indiana	954,581	894,518	93.71%	954,581	894,233	93.68%
Iowa	483,652	479,023	99.04%	483,652	478,941	99.03%
Kansas	437,034	453,170	103.69%	437,034	453,170	103.69%
Kentucky	636,401	617,625	97.05%	636,401	614,306	96.53%
Louisiana	784,757	738,300	94.08%	784,757	736,937	93.91%
Maine	215,149	218,614	101.61%	215,149	218,583	101.60%
Maryland	715,176	675,491	94.45%	715,176	675,491	94.45%
Massachusetts	834,314	810,755	97.18%	834,314	800,915	96.00%
Michigan	1,581,925	1,418,907	89.69%	1,581,925	1,415,801	89.50%
Minnesota	756,374	719,581	95.14%	756,374	714,330	94.44%
Mississippi	502,417	506,697	100.85%	502,417	505,664	100.65%
Missouri	812,234	818,239	100.74%	812,234	809,915	99.71%
Montana	152,974	157,530	102.98%	152,974	157,530	102.98%
Nebraska	274,081	260,030	94.87%	274,081	259,974	94.85%
Nevada	201,316	198,751	98.73%	201,316	197,376	98.04%
New Hampshire	172,785	147,023	85.09%	172,785	147,023	85.09%
New Jersey	1,089,646	1,112,872	102.13%	1,089,646	1,112,101	102.06%
New Mexico	301,881	292,482	96.89%	301,881	292,482	96.89%
New York	2,598,337	2,384,989	91.79%	2,598,337	2,380,910	91.63%
North Carolina	1,086,871	1,069,603	98.41%	1,086,871	1,069,310	98.38%
North Dakota	117,825	118,778	100.81%	117,825	118,547	100.61%
Ohio	1,771,516	1,716,955	96.92%	1,771,516	1,715,638	96.85%
Oklahoma	579,087	574,546	99.22%	579,087	574,517	99.21%
Oregon	484,652	459,106	94.73%	484,652	459,095	94.73%
Pennsylvania	1,667,834	1,722,046	103.25%	1,667,834	1,721,896	103.24%
Rhode Island	138,813	148,027	106.64%	138,813	147,993	106.61%
South Carolina	622,112	649,828	104.46%	622,112	649,513	104.40%
South Dakota	129,164	148,790	115.19%	129,164	148,722	115.14%
Tennessee	824,595	789,393	95.73%	824,595	789,045	95.69%
Texas	3,382,887	3,323,523	98.25%	3,382,887	3,323,185	98.24%
Utah	447,891	438,875	97.99%	447,891	438,708	97.95%
Vermont	95,762	90,632	94.64%	95,762	90,632	94.64%
Virginia	998,601	943,179	94.45%	998,601	942,699	94.40%
Washington	839,709	897,997	106.94%	839,709	889,590	105.94%
West Virginia	322,389	336,584	104.40%	322,389	331,372	102.79%
Wisconsin	797,621	796,131	99.81%	797,621	795,561	99.74%
Wyoming	98,226	101,710	103.55%	98,226	101,704	103.54%

Source: U.S. Department of Education, NCES, 1990-91 CCD and 1990-91 SASS (Public School)

Table 5.--Number of Hispanic students (grades K-12)

FIPS CODE	STATE	ORIGINAL 1990-91 SASS DATA	AFTER CCD ADJUSTMENT	PERCENT CHANGED
Totals		**4,444,996**	**4,438,542**	**-.1452**
01	Alabama	1,822	1,822	0
02	Alaska	2,371	2,356	-0.6428
04	Arizona	156,165	15,4313	-1.1856
05	Arkansas	3,353	3,353	0
06	California	1,675,266	1,674,778	-0.0291
08	Colorado	96,763	96,763	0
09	Connecticut	41,091	41,091	0
10	Delaware	2,288	2,288	0
11	Washington, D.C.	6,892	6,881	-0.1651
12	Florida	234,373	231,228	-1.342
13	Georgia	9,489	9,444	-0.4663
15	Hawaii	7,086	7,086	0
16	Idaho	11,575	11,575	0
17	Illinois	137,087	137,041	-0.034
18	Indiana	15,580	15,567	-0.0805
19	Iowa	5,807	5,807	0
20	Kansas	20,031	20,031	0
21	Kentucky	1,779	1,763	-0.9042
22	Louisiana	11,542	11,542	0
23	Maine	713	713	0
24	Maryland	10,631	10,631	0
25	Maine	71,174	71,069	-0.1474
26	Michigan	34,897	34,842	-0.157
27	Minnesota	10,739	10,727	-0.1111
28	Mississippi	717	717	0
29	Missouri	6,837	6,809	-0.4027
30	Montana	1,914	1,914	0
31	Nebraska	6,234	6,234	0
32	Nevada	21,616	21,616	0
33	New Hampshire	1,204	1,204	0
34	New Jersey	134,153	134,133	-0.015
35	New Mexico	129,530	129,530	0
36	New York	333,730	333,565	-0.0496
37	North Carolina	7,190	7,190	0
38	North Dakota	713	713	0
39	Ohio	28,364	28,312	-0.1815
40	Oklahoma	13,959	13,959	0
41	Oregon	19,488	19,488	0
42	Pennsylvania	44,020	44,020	0
44	Rhode Island	9,329	9,329	0
45	South Carolina	2,877	2,877	0
46	South Dakota	738	738	0
47	Tennessee	2,759	2,759	0
48	Texas	1,006,927	1,006,917	-0.001
49	Utah	16,601	16,599	-0.0076
50	Vermont	276	276	0
51	Virginia	17,302	17,302	0
52	Washington	48,434	48,058	-0.776
54	West Virginia	675	675	0
55	Wisconsin	15,109	15,109	0
56	Wyoming	5,789	5,789	0

Source : U.S. Department of Education, NCES, 1990-91 CCD, 1990-91 SASS, and 1988-89 CCD

Table 6.--Number of students participating in extended day or before- or after-school day-care

FIPS CODE	STATE	ORIGINAL 1990-91 SASS DATA	AFTER CCD ADJUSTMENT	PERCENT CHANGED
Totals		**882,836**	**868,691**	**-1.6021**
01	Alabama	9,041	9,041	0
02	Alaska	1,412	1,412	0
04	Arizona	13,836	12,869	-6.9948
05	Arkansas	3,024	3,024	0
06	California	178,109	175,831	-1.2791
08	Colorado	8,802	8,802	0
09	Connecticut	16,806	16,806	0
10	Delaware	1,679	1,679	0
11	Washington, D.C.	6,559	6,540	-0.2892
12	Florida	74,273	70,174	-5.5198
13	Georgia	18,644	18,574	-0.3792
15	Hawaii	22,788	22,788	0
16	Idaho	559	559	0
17	Illinois	51,859	51,859	0
18	Indiana	8,350	8,304	-0.5579
19	Iowa	4,106	4,106	0
20	Kansas	4,337	4,337	0
21	Kentucky	24,357	22,520	-7.5393
22	Louisiana	16,716	16,716	0
23	Maine	2,061	1,115	-45.9068
24	Maryland	15,874	15,874	0
25	Massachusetts	16,628	16,196	-2.5991
26	Michigan	30,309	30,130	-0.5876
27	Minnesota	12,278	12,133	-1.1817
28	Mississippi	5,164	5,164	0
29	Missouri	14,958	12,196	-18.4604
30	Montana	374	374	0
31	Nebraska	2,555	2,555	0
32	Nevada	4,042	4,042	0
33	New Hampshire	1,771	1,771	0
34	New Jersey	24,771	24,771	0
35	New Mexico	7,525	7,525	0
36	New York	82,619	82,609	-0.0125
37	North Carolina	33,776	33,776	0
38	North Dakota	498	498	0
39	Ohio	19,973	19,973	0
40	Oklahoma	5,280	5,280	0
41	Oregon	6,631	6,432	-3.0092
42	Pennsylvania	17,440	17,440	0
44	Rhode Island	531	510	-3.8913
45	South Carolina	5,675	5,675	0
46	South Dakota	192	192	0
47	Tennessee	12,593	12,593	0
48	Texas	47,246	47,246	0
49	Utah	5,531	5,531	0
50	Vermont	1,028	1,028	0
51	Virginia	17,226	17,226	0
52	Washington	9,746	9,614	-1.3611
54	West Virginia	5,218	5,218	0
55	Wisconsin	7,652	7,652	0
56	Wyoming	413	413	0

Source: U.S. Department of Education, NCES, 1990-91 CCD, 1990-91 SASS, and 1988-89 CCD

Table 7.--Number of students who receive free or reduced price lunches

FIPS CODE	STATE	ORIGINAL 1990-91 SASS DATA	AFTER CCD ADJUSTMENT	PERCENT CHANGED
Totals		**12,703,441**	**12,448,336**	**-2.0082**
01	Alabama	305,693	300,268	-1.7745
02	Alaska	22,668	19,547	-13.765
04	Arizona	203,118	201,043	-1.0214
05	Arkansas	163,881	163,881	0
06	California	1,685,105	1,661,018	-1.4294
08	Colorado	133,597	129,012	-3.4324
09	Connecticut	88,622	87,780	-0.9502
10	Delaware	22,822	22,651	-0.7482
11	Washington, D.C.	41,589	41,137	-1.0856
12	Florida	685,576	669,234	-2.3836
13	Georgia	391,718	384,857	-1.7514
15	Hawaii	49,563	49,563	0
16	Idaho	61,041	58,135	-4.761
17	Illinois	613,978	609,254	-0.7695
18	Indiana	211,097	204,952	-2.9111
19	Iowa	114,268	113,205	-0.9303
20	Kansas	114,723	111,767	-2.5769
21	Kentucky	227,837	223,333	-1.9772
22	Louisiana	360,467	343,349	-4.7488
23	Maine	6,0021	56,981	-5.0654
24	Maryland	179,356	179,356	0
25	Massachusetts	180,225	175,955	-2.3691
26	Michigan	322,008	312,635	-2.9109
27	Minnesota	164,839	148,575	-9.8669
28	Mississippi	280,784	278,484	-0.8194
29	Missouri	241,197	236,993	-1.7429
30	Montana	50,880	50,230	-1.2779
31	Nebraska	63,645	62,423	-1.9195
32	Nevada	35,677	33,887	-5.0161
33	New Hampshire	20,535	18,840	-8.2564
34	New Jersey	266,759	266,019	-0.2773
35	New Mexico	137,995	137,704	-0.2109
36	New York	849,759	823,229	-3.1221
37	North Carolina	328,403	328,217	-0.0569
38	North Dakota	38,320	37,247	-2.7997
39	Ohio	405,090	402,992	-0.5181
40	Oklahoma	242,055	235,361	-2.7657
41	Oregon	108,591	107,440	-1.0604
42	Pennsylvania	396,656	393,555	-0.7817
44	Rhode Island	34,177	33,679	-1.4548
45	South Carolina	243,378	243,200	-0.0731
46	South Dakota	54,253	52,979	-2.3481
47	Tennessee	259,618	259,460	-0.0609
48	Texas	1,328,759	1,284,815	-3.3072
49	Utah	102,843	102,299	-0.5296
50	Vermont	17,234	17,234	0
51	Virginia	232,654	232,654	0
52	Washington	222,182	215,759	-2.8909
54	West Virginia	140,398	136,880	-2.5062
55	Wisconsin	172,631	167,900	-2.7405
56	Wyoming	25,155	21,371	-15.0441

Source: U.S. Department of Education, NCES, 1990-91 CCD, 1990-91 SASS, and 1988-89 CCD

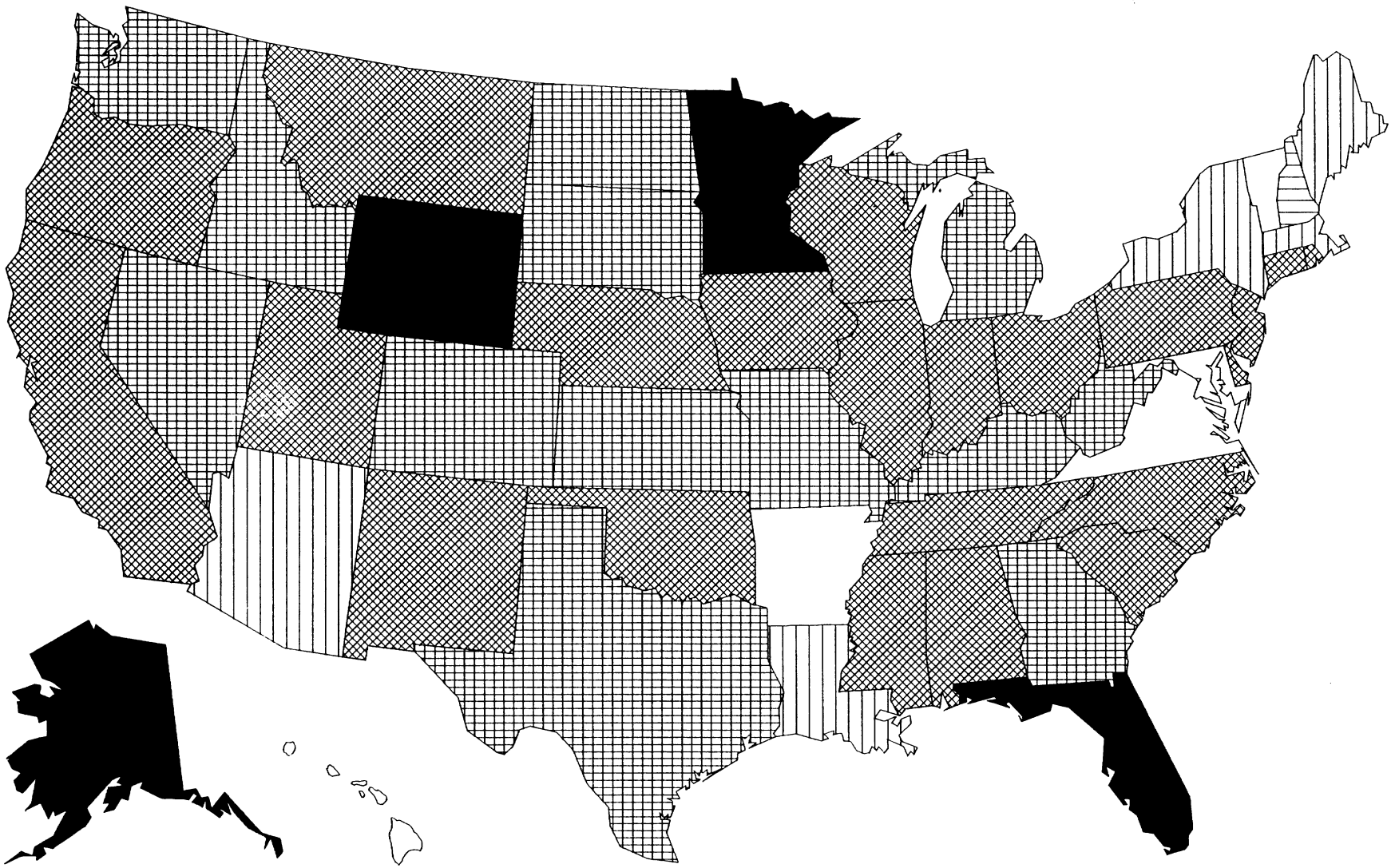
Maps for Number of Full-Time Equivalent Teachers and Total Student Enrollment

The differences between estimates for total student enrollment and the number of full-time equivalent teachers from the 1990-91 SASS and CCD-adjusted estimates are expressed on the following 2 pages in map format. These maps indicate the percentage difference between SASS and CCD-adjusted estimates by state and the District of Columbia. CCD-adjusted estimates are either the same or lower than SASS estimates for total student enrollment and the number of full-time equivalent teachers. For total student enrollment, all individual states are identified in six categories of percent difference: 0 percent, .001 to .99 percent, 1.0 to 1.99 percent, 2.0 to 2.99 percent, 3.0 to 3.99 percent, and greater than 4 percent. For full-time equivalent teachers, all individual states are identified in five separate categories of percent difference: 0 percent, 0 to 4.99 percent, 5 to 9.99 percent, 10 to 14.99 percent, and greater than 15 percent.

The following two maps correspond to tables 3 and 4 on pages 12 and 13. Exact percentages for the difference between SASS estimates and CCD-adjusted estimates are located in these two tables. The percent differences for the two maps are based upon CCD-adjusted estimates being the same or lower than SASS estimates. For example, in *Figure 1: Percent Difference of Total Student Enrollment*, states which fall under the category 1.0 percent to 1.99, are states in which CCD-adjusted estimates are from one percent to 1.99 percent less than SASS estimates.

Figure 1: Percent Difference of Total Student Enrollment

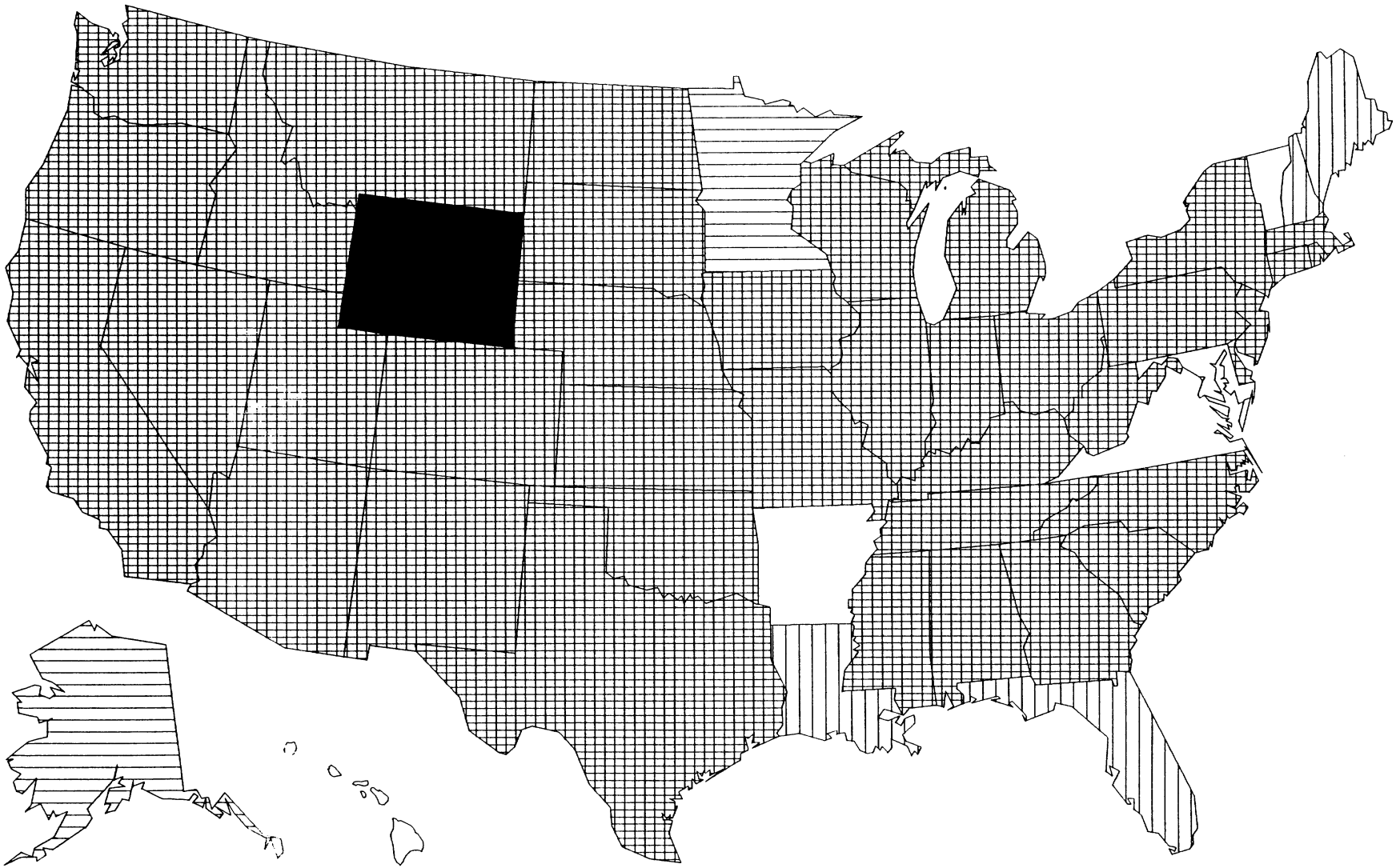
Between SASS 1990-91 and CCD 1990-91



SOURCE: NCES, Schools and Staffing Survey (School Questionnaire): 1990-91
NCES, Common Core of Data (State Aggregate): 1988 and 1990

Figure 2: Percent Difference of Full–time Equivalent Teachers

Between SASS 1990-91 and CCD 1990-91



SOURCE: NCES, Schools and Staffing Survey (School Questionnaire): 1990-91
NCES, Common Core of Data (State Aggregate): 1988 and 1990

Out of 8969 schools in the SASS dataset, nine control numbers for schools with extra records were found. This problem was diagnosed as "duplicates." The control numbers matched with four schools which are verified either as original schools or their "split." These school do not represent a major contribution toward overestimates but are noted as a source of overestimation in Table 8 below.

Table 8.--1990-91 SASS Schools with duplicate Identification numbers

Observation	ACCDID	CNTLNUM
1	010114000419	001103550138
2	010114000419	001803550132
3	069101609229	006120650139
4	069101609229	006820650139
5	250741001146	025106950130
6	250741001146	025806950134
7	280240000465	028105250130
8	280240000465	028805250134
9	280240000465	028905250132

Source: U.S. Department of Education, NCES, 1990-91 CCD, 1990-91 SASS, and 1988-89 CCD

V. Results and Conclusions

Tables 3 and 4 demonstrate the differences between SASS estimates for FTES and total student enrollment, the key estimates. SASS and CCD-adjusted data report the same number of students in only five states: Arkansas, Hawaii, Maryland, Vermont, and Virginia. The difference between total enrollment reported in the 1990-91 SASS and the CCD-adjusted total enrollment is between 0 and one percent in 24 states. In four states, the CCD-adjusted estimates are approximately 5 percent lower than the original SASS estimates: Alaska, Florida, Minnesota, and Wyoming. The differences in estimates from SASS and CCD-adjusted estimates on the number of full-time equivalent teachers (table 3) is as high as 19 percent in Wyoming. Other states which report significantly lower CCD-adjusted estimates than SASS are Alaska (13 percent), Minnesota (11 percent), and New Hampshire (9 percent). Only 5 states report the same numbers from SASS data and CCD-adjusted data: Arkansas, Hawaii, Maryland, Vermont, and Virginia.

A comparison of SASS and CCD-adjusted estimates for total student enrollment and full-time equivalent teachers indicate that the problem of overestimating in the 1990-91 SASS occurs more frequently in some states. For example, SASS estimates in Wyoming are over 5 percent higher than CCD-adjusted estimates for total student enrollment and over 19 percent higher

for the number of full-time equivalent teachers . Alaska and Minnesota report approximately 5 percent higher SASS estimates for total student enrollment. These two states also report significantly higher estimate for the number of full-time equivalent teachers (13 and 11 percent, respectively). In Florida, SASS reports approximately 5 percent higher total student enrollments and about 6 percent higher full-time equivalent teachers than CCD-adjusted estimates. CCD-adjusted estimates and SASS estimates, however, in five states (Arkansas, Hawaii, Maryland, Vermont, and Virginia) are the same.

Estimates for the number of Hispanic students in grades K through 12 are the same in 32 states for 1990-91 SASS estimates and CCD-adjusted estimates (table 5). In addition, for all states and the District of Columbia the difference in estimates is less than one percent. SASS estimates on the number of students participating in extended day or before- or after-school day-care (table 6) and the SASS CCD-adjusted estimates, however, differ considerably in some states. In Maine, CCD-adjusted data report 45 percent less than SASS data; in Missouri, the difference in estimates is 18 percent.

The difference in SASS estimates for the number of students who receive free or reduced price lunches (table 7) and SASS CCD-adjusted estimates differ by less than one percent in only 18 states. In Wyoming and Alaska, SASS data report 15 and 13 percent higher numbers than the SASS CCD-adjusted data, respectively. SASS CCD-adjusted estimates for this characteristic are 8 percent less than SASS estimates in New Hampshire. In Idaho, Louisiana, Maine, and Nevada the difference is approximately 5 percent.

Questions and Concerns

Examining estimates for total enrollment and full-time equivalent teachers from the 1990-91 SASS in relation to CCD-adjusted estimates raise some questions and issues about the source of overestimation:

- How do schools in Arkansas, Hawaii, Maryland, Vermont, and Virginia calculate both student enrollment and full-time equivalent teachers?
- How is this different than Wyoming, Alaska, Minnesota, and Florida?
- Do states use the same formula, in the CCD, for counting part-time teachers in determining the number of full-time equivalent teachers?
- Do states count specific categories of students in the CCD (i.e., technical/vocational and special education) as being part of the total enrollment?

Listing of NCES Working Papers to Date

Number	Title	Contact
94-01	Schools and Staffing Survey (SASS) Papers Presented at Meetings of the American Statistical Association	Dan Kasprzyk
94-02	Generalized Variance Estimate for Schools and Staffing Survey (SASS)	Dan Kasprzyk
94-03	1991 Schools and Staffing Survey (SASS) Reinterview Response Variance Report	Dan Kasprzyk
94-04	The Accuracy of Teachers' Self-reports on their Postsecondary Education: Teacher Transcript Study, Schools and Staffing Survey	Dan Kasprzyk
94-05	Cost-of-Education Differentials Across the States	William Fowler
94-06	Six Papers on Teachers from the 1990-91 SASS and Other Related Surveys	Dan Kasprzyk
94-07	Data Comparability and Public Policy: New Interest in Public Library Data Papers Presented at Meetings of the American Statistical Association	Carrol Kindel
95-01	Schools and Staffing Survey: 1994 papers presented at the 1994 Meeting of the American Statistical Association	Dan Kasprzyk
95-02	QED Estimates of the 1990-91 Schools and Staffing Survey: Deriving and Comparing QED School Estimates with CCD Estimates	Dan Kasprzyk
95-03	Schools and Staffing Survey: 1990-91 SASS Cross-Questionnaire Analysis	Dan Kasprzyk

Listing of NCES Working Papers to Date (Continued)

Number	Title	Contact
95-04	National Education Longitudinal Study of 1988: Second Follow-up Questionnaire Content Areas and Research Issues	Jeffrey Owings
95-05	National Education Longitudinal Study of 1988: Conducting Trend Analyses of NLS-72, HS&B, and NELS:88 Seniors	Jeffrey Owings
95-06	National Education Longitudinal Study of 1988: Conducting Cross-Cohort Comparisons Using HS&B, NAEP, and NELS:88 Academic Transcript Data	Jeffrey Owings
95-07	National Education Longitudinal Study of 1988: Conducting Trend Analyses HS&B and NELS:88 Sophomore Cohort Dropouts	Jeffrey Owings
95-08	CCD Adjustments to the 1990-91 SASS: A Comparison of Estimates	Dan Kasprzyk